Translation

PCT/EP2003/011126

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference M 4772-ro/al	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/011126	International filing date (*day/month/year*) 08 October 2003 (08.10.2003)	Priority date (*day/month/year*) 09 October 2002 (09.10.2002)
International Patent Classification (IPC) or national classification and IPC G01N 21/05		
Applicant MICRO-BIOLYTICS GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
23 April 2004 (23.04.2004)	14 January 2005 (14.01.2005)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/011126

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-16, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages 1-7, filed with the letter of 28 December 2004 (28.12.2004)

☒ the drawings:

pages 1/2-2/2, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP 03/11126

I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

1. **Amended version of the claims**

The amendments submitted with the letter of 27 December 2004 satisfy the requirements of PCT Article 34(2)(b). The new claim 1 corresponds to the version of claim 1 submitted with the letter of 15 April 2004, the features of claim 7 having been incorporated thereinto.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-7	YES
	Claims		NO
Inventive step (IS)	Claims	1-7	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO

2. Citations and explanations

1. **CITATIONS**

This report makes reference to the following documents:

D1: DE 101 04 957 A (GESIM GES FUER SILIZIUM MIKROS) 21 March 2002 (2002-03-21)

D2: DE 41 37 060 A (FRAUNHOFER GES FORSCHUNG) 13 May 1993 (1993-05-13)

D3: DE 197 39 126 C (KARLSRUHE FORSCHZENT) 20 April 1999 (1999-04-29).

2. **NOVELTY AND INVENTIVE STEP (PCT Article 33(2) and (3))**

The present application satisfies the requirements of PCT Article 33(1) because the subject matter of claim 1 is novel (PCT Article 33(2)) and involves an inventive step (PCT Article 33(3)).

2.1 **INDEPENDENT CLAIM 1**

Document D1, considered to be the closest prior art, discloses a method for the production of a flowmeter cell (see claims 1-16; figures 4 and 5), said method comprising the following steps:

a) providing a first (2) and a second (1) window, the second window (1) having at least two sample flow-channels (4) for supplying and removing the sample to be measured;

b) applying a structured thin layer (5) to one of the windows (1);

c) contacting the thin layer (5) with the other window (2) and securing said thin layer thereto in a fluidically sealed manner, such that mutually facing, plane-parallel window surfaces of windows (1, 2) and the thin layer (5) delimit a flow space (3) which is accessible only via the sample flow-channels (4), at least some regions of said windows (1, 2) being optically transparent at least in the region of the flow space (3); and

d) using adhesive to fill at least some regions of a filled space (14) between the windows (1, 2), said filled space being separated from the flow space (3) by the thin layer (5) and being adjacent to the structured thin layer (5), wherein the fluidically sealed attachment of the thin layer (5) to said other window (1, 2) comprises the softening of the thin layer in order to temporarily reduce the viscosity thereof by increasing the temperature of the thin layer, and/or by increasing the contact pressure of said thin layer on the other window (see D1, column 3, lines 24-30).

The method according to claim 1 differs from the method known from D1 in that:

e) the thin-layer is removed after step d).

Claim 1 therefore satisfies the requirement of novelty (PCT Article 33(2)).

The technical effect of feature e) is that the thin layer defines the geometry of the flow space but does not delimit said space.

The problem solved by the present invention consists in developing a method whereby thin-layer cells can be produced with increased precision and consistency of film thickness, according to which even the design of complex geometries of the discharge space and sample flow-channels poses no problem, owing to the geometric configuration of the thin layer.

By means of steps a) to e) of the method according to the invention, it is possible to miniaturise the thin-layer cell.

None of the documents cited in the search report discloses, or contains anything to suggest, producing a thin-layer cell in this way.

D2 discloses a cuvette for use in infrared spectroscopy, the narrow gap width therein being achieved by virtue of the fact that the spacer between the windows, which spacer determines the gap width, is a silicon dioxide layer applied to one of the silicon wafers, for example by epitaxy. The gap width can thus be varied within a wide range. The silicon dioxide layer is firmly bonded to the second

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silicon wafer. Two openings that pass through the silicon wafer serve as inlet and outlet openings for the substance under investigation, said openings being arranged such that, after application of the silicon dioxide layer, the ends thereof are in the recess of said silicon dioxide layer. After the sample volume has been filled with the substance to be investigated, the openings are closed.

D3 concerns the prevention of interference patterns and figure 1 of said document shows the construction of the thin-layer cell in which the optical path length is between 3 and 200 µm. Said thin-layer cell is composed of a cover plate 1 with a trench structure and the base plate 2, the optical path length being determined by the depth of the trench in cover plate 1. Figure 2 discloses a cover plate with additional structuring for the prevention of interference patterns.

The method according to claim 1 is therefore considered to be inventive.